Press Release: A National Airspace Redesign (NAR), Subgroup for Oceanic Airspace Redesign (SOAR) project.

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Preparations for New Technologies and Oceanic Procedures

During 2001, New York Center North Atlantic operations personnel engaged in extensive planning to take advantage of technological and procedural improvements to the current Ocean Display and Processing System (ODAPS). The basic goals were to provide immediate operational improvement to the non-radar functions, create a base line operation that could be used for future enhancements, and to introduce concepts that would be included within the Advanced Technologies and Oceanic Procedures system (ATOP). Collaborative visitations with Oakland Oceanic and Anchorage Oceanic helped provide the basis for the design and physical layout of the controller workstations. These operational exchanges were accomplished due to the creation of the Subgroup for Oceanic Airspace Redesign (SOAR) under the auspices of the National Airspace Redesign (NAR), whose mission includes optimization and standardization of oceanic operations agency wide.

The previous method of operation was severely limited from an automation perspective. Air traffic operations within nearly 3 million square miles of non-radar airspace were limited to three geographically fixed sectors. Electronically attached to these fixed sectors was the flight data processing, conflict probe, communications via ARINC (Aeronautical Radio Incorporated) still printed on rolled paper, and a centralized location for flight strip production. Each non-radar sector relied on two people, a non-radar controller and a shared ODAP controller whose responsibility it was to maintain an accurate real time database of that sectors' flight data (**Diagram 1**). This reliance on a two-person operation and the often-great distance between controllers was inefficient and potentially prone to communication/coordination errors.

Further complicating the North Atlantic operation is the constantly changing route structure. The North Atlantic airspace is nearly devoid of any fixed airway structure, relying on a combination of random route flight and an organized track structure (OTS). The OTS is developed twice daily, by the 4 major North Atlantic service providers, to organize major traffic flows between heavily flown city pairs or geographic regions (i.e. New York area airports to London area airports). Oceanic tracks are developed taking into consideration; the direction of the major traffic flow (westbound during morning hours, eastbound during evening hours), user submitted Preferred Route Messages (PRM), and the forecast location and movement of the jet stream.

As the track structure moves, so does the impact of its traffic. When the structure is partially or entirely within New York North Atlantic airspace, traffic volumes would routinely triple from normal levels requiring more sectors and workstations than were previously available. At times as many as 6 sectors were necessary when only 3 existed. Additionally, these constantly changing random routes and tracks routinely were not aligned within the existing fixed sector boundaries and their automated peripheral components; consequently the concept of dynamic sectorization was created. By identifying flight plan areas (FPA) and making them combinable with each other, the three fixed geographic sector boundaries were increased to as many as 158 different assignable airspace segments. **Diagram 2** depicts the original 3 fixed sector boundaries in green, and an overlying typical dynamic winter flow configuration of sector boundaries by direction (blue eastbound, red westbound).

The inefficiencies of this configuration resulted in longer replies to pilot requests, inefficient use of airspace, unbalanced sector workloads, unproductive use of time to sort through and share printed pilot position reports, and delays in responding to changing operational dynamics.

New Capabilities Shown

During July 2002 New York center unveiled its new North Atlantic operational capabilities. Included were 6 individual sector suite workstations each equipped with an ODAP display, Controller Pilot Data Link Communications (CPDLC), individual flight strip printer, and an Oceanic Data Link system (ODL) for electronic ARINC message dissemination and reception with specific sector routing - eliminating the printed ARINC message. **Diagrams 3**and **4** display a single workstation.

Since then, the North Atlantic area has further implemented; CPDLC in its full message set configuration, and Air Traffic Services Inter-facility Data Communication (AIDC) with Santa Maria. AIDC is expected to be expanded to include Gander Center in 3 months.

Benefits Derived

These enhancements have resulted in quicker replies and approvals to pilot requests, reduced controller workload and complexity, helped further reduce the human element in communication/coordination errors, and are assisting in the creation of a seamless air traffic operation between the many international service providers that compromise the North Atlantic airspace.

Future Enhancements

Additional near term equipment and procedural enhancements will include; the implementation of Centralized Automatic Dependent Surveillance (CADS) by September 2003, this will create a common waypoint reporting system within the NAT, and true dynamic non-radar sectorizations that will allow both altitude and boundary stratification's without the present 158 segment limitation, expected to become operational during October 2003. Transitional oceanic radar sectors are being modified to allow for dynamic boundaries to accommodate wind driven and seasonal flows of traffic.

The improvements to the North Atlantic operation would not have been possible without the dedicated efforts of national, regional, local, technical center, contract personnel and the original ODAP development team many years ago. To these great many professionals, New York Center Oceanic says – Thanks.

Diagram 1: Staffed Original Configuration

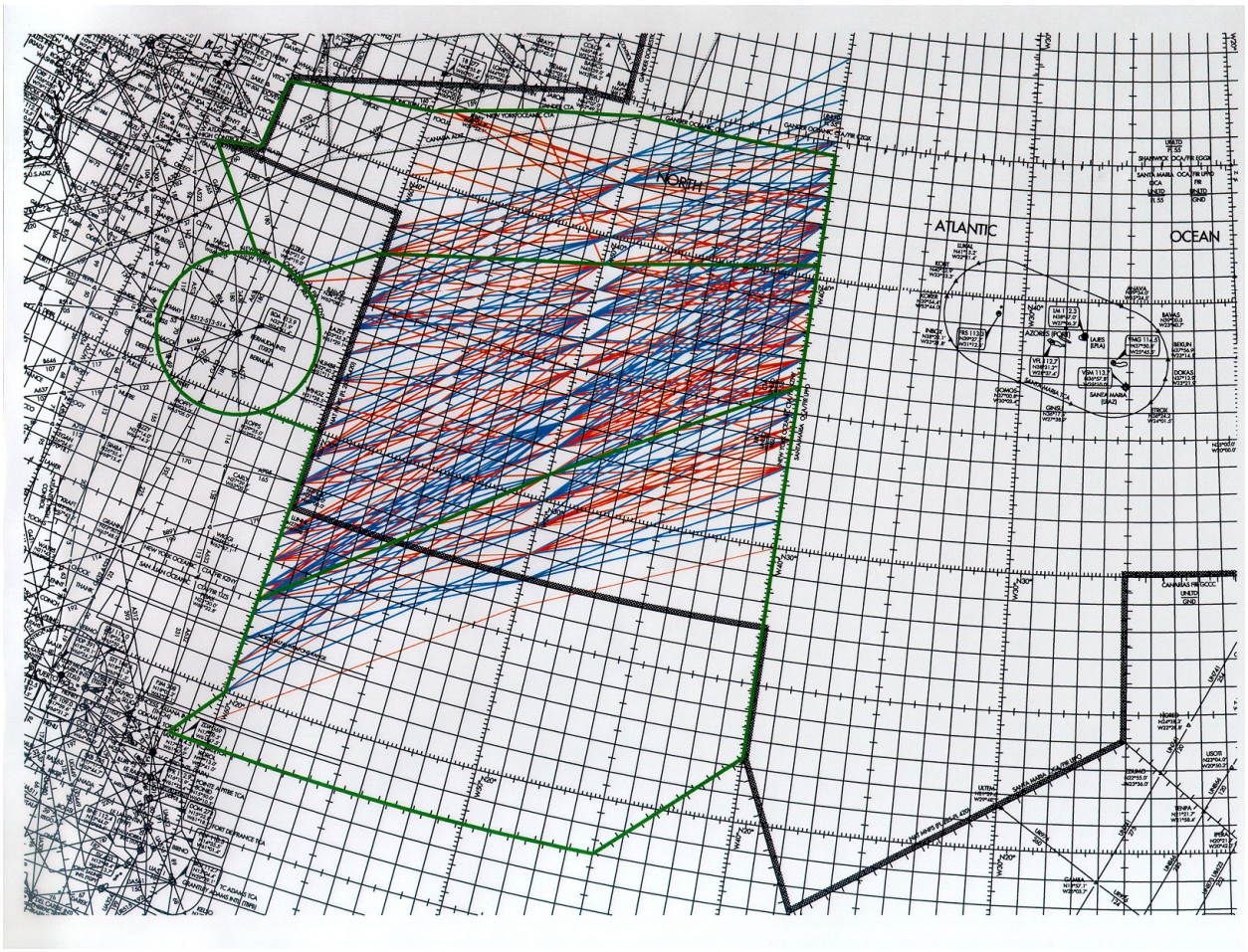

Diagram 2: Winter Flow

Diagram 3: Unstaffed Reconfiguration

Diagram 4: Staffed Reconfiguration